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Predicting Driver Distraction Using Computed Occlusion Task Times: Estimation of Task Element Times and Distributions

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Summary

Today's cars are equipped with electronic devices that create a potential for distraction that is far greater than what drivers experience in older cars with less sophisticated controls and displays. This research is concerned with determining how long it takes to perform tasks on modern navigation, entertainment, and driver-information systems. The longer it takes, the greater the potential for distraction.

The National Highway Traffic Safety Administration (NHTSA) has established guidelines for acceptable times to perform the tasks necessary to operate these devices. NHTSA has also recommended a commonly used test for estimating task-completion times called the visual-occlusion method, which uses human subjects wearing goggles that open and close (occlude vision) to simulate distraction while driving.

This report describes methods developed by UMTRI researchers to calculate task times without the need for human subjects, an approach that is much less costly and less time consuming, and which also helps in designing and developing electronic devices that are less distracting. UMTRI researchers base their calculations on task times derived from human-subject testing done with and without the occlusion goggles. An added benefit of this research is that the data that is produced by UMTRI's calculations can be used to make refinements and improvements to Society of Automotive Engineers (SAE) Recommended Practice J2365, *Calculation of the Time to Complete In-Vehicle Navigation and Route Guidance Tasks* and Pettitt's Method, upon which UMTRI's calculations are based.